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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
EHICHIOYA, FRED I	

ART UNIT	PAPER NUMBER
2169	

NOTIFICATION DATE	DELIVERY MODE
03/17/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/826,517	BAILEY ET AL.	
	Examiner	Art Unit	
	FRED I. EHICHIOYA	2169	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 3, 5 - 18, 20 - 21, 23 - 24, and 26 - 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 3, 5 - 18, 20 - 21, 23 - 24, and 26 - 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to communication filed December 10, 2008.

2. Claims 1 – 3, 5 – 18, 20, 21, 23, 24 and 26 - 30 are pending in this Office Action.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 – 3, 5 – 8, 11 – 17, 21, 23 – 24, 26 - 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,414,839 issued to Ashok M. Joshi (hereinafter "Joshi") in view of U.S. Pub. No. 2003/0093652 issued to Seungyoon Peter Song (hereinafter "Song").

Regarding claim 1, Joshi teaches a computer implemented system for managing the access of system resources in a database comprising the following computer executable components:

a lock manager (see column 9, line 1) that acquires a parent lock and one or more child locks (see column 10, lines 29 – 34*: "ancestor is a parent while descendants are children")* on resource(s) of a database (see column 16, lines 17 – 18), the lock manager stores a reference count of the one or more child locks within the parent lock

such that (see column 15, lines 38 – 39) as each child lock is released (column 12, lines 56 – 59).

Joshi does not explicitly disclose decrementing reference count by a value of one as claimed.

Song discloses the reference count decrements by a value of one and the parent lock is released upon release of all child locks associated therewith (see page 2, [0022]: ***"The reference count of the entry that was previously assigned to the destination register (the entry number that was kept in the destination register's architectural state pointer before it was written with the new entry number) is decremented by 1. In most cases, the decremented reference count becomes 0, indicating that the associated entry is now free" – free is analogous to release***).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Song's teaching of reference count decrements by a value of one would have allowed Joshi's system to keep tack of the entries in a queue. The reference counter is associated with each of the entries the queue.

Regarding claim 2, Song discloses the parent lock is released upon the reference count attainment of a zero value (see page 2, [0022]: ***"In most cases, the decremented reference count becomes 0, indicating that the associated entry is now free" – The concept of the parent lock is explained on page 4, [0038] and [0039])***.

Regarding claim 3, Joshi disclose a lock monitoring system that monitors the reference count of child locks associated with the parent lock (see column 12, lines 34 – 36).

Regarding claim 5, Joshi teaches the system of claim 1 further comprises a lock hierarchy designated by the lock manager (see column 9, lines 65 - 68).

Regarding claim 6, Joshi discloses the lock hierarchy comprises at lest one of a database lock, page lock, table lock (see column 2, line 34) and row.

Regarding claim 7, Joshi teaches the system of claim 5 further comprising a page scan optimization that maintains a last child lock until a next one is acquired (column 18, lines 42 - 49).

Regarding claim 8, Joshi teaches the system of claim 1, the parent lock is an intent lock that protects resource at lower level (column 13, lines 31 - 40).

Regarding claim 11, Joshi teaches the system of claim 1 further comprises a pointer that can guide a release operation from each child lock to a respective parent lock (column 10, lines 63 – 68).

Regarding claim 12, Joshi teaches a computer implemented for controlling locks to manage access to system resources in a database comprising:

defining a parent-child relationship among a plurality of locks in a lock hierarchy (see column 10, lines 63 – 65);

reference counting one or more child locks associated with parent lock, such that a parent lock maintains a count reference of respective child locks associated therewith (see column 15, lines 34 – 39) and as each child lock is released (column 12, lines 56 – 57).

Joshi does not explicitly teach reference count decrements by a value of one as claimed.

Song discloses the reference count decrements by a value of one and releasing a parent lock upon a release of all the respective child locks associated therewith (see page 2, [0022]: ***"The reference count of the entry that was previously assigned to the destination register (the entry number that was kept in the destination register's architectural state pointer before it was written with the new entry number) is decremented by 1. In most cases, the decremented reference count becomes 0, indicating that the associated entry is now free" – free is analogous to release***).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Song's teaching of reference count decrements by a value of one would have allowed Joshi's system to keep tack of the entries in a queue. The reference counter is associated with each of the entries the queue.

Regarding claim 13, Joshi teaches the method of claim 12 the defining act further comprising arranging a top-down lock granularity based on logical or physical granularities of objects stored in the database (see column 10, lines 35 - 37).

Regarding claim 14, Joshi teaches the method of claim 12 further comprising pointing to a parent lock upon releasing a respective child lock associated therewith (see column 14, lines 1 - 5).

Regarding claim 15, Joshi teaches the method of claim 12 further comprising reference counting child locks directly associated with the parent lock (see column 15, lines 34 - 39).

Regarding claim 16, Joshi discloses the method of claim 12 further comprising acquiring an intent lock at least in one of a table level (see column 2, line 34), page level and database level.

Regarding claim 17, Joshi teaches the method of claim 12 further comprising scoping the reference counting of a lock to a transaction (see column 15, lines 34 – 39).

Regarding claim 21, Joshi teaches a computer implemented method for controlling locks to manage access to system resources in a database comprising:

releasing a child lock (see column 4, line 57 "leaf node" is the "child node").

Joshi does not explicitly disclose decrementing the reference count as claimed.

Song discloses

counting one or more child locks associated with a parent lock to obtain a reference count of the child locks associated therewith (see page 3, [0025]);

decrementing the reference count by a value of one; and releasing the parent lock upon the reference count reaching a zero value (see page 2, [0022]: ***"The reference count of the entry that was previously assigned to the destination register (the entry number that was kept in the destination register's architectural state pointer before it was written with the new entry number) is decremented by 1. In most cases, the decremented reference count becomes 0, indicating that the associated entry is now free" – free is analogous to release***).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Song's teaching of reference count decrements by a value of one would have allowed Joshi's system to keep tack of the entries in a queue. The reference counter is associated with each of the entries the queue.

Regarding claim 23, Joshi disclose monitoring the reference count (see column 12, lines 34 – 36).

Regarding claim 24, Joshi discloses identifying the parent lock via a pointer (see column 10, lines 63 – 65).

Regarding claim 26, Joshi teaches a computer implemented database lock management system for managing access to system resources comprising:

a computer executable lock manager (see column 9, line 1) that acquires at least a parent lock and one or more child locks (see column 10, lines 29 - 34) on a database resource (see column 16, lines 17 - 18), the lock manager creates within the parent lock a reference count of the child lock (see column 15, lines 38 – 39).

Joshi does not explicitly teach reference count decremented by one as claimed.

Song discloses the reference count is decremented by one on the release of each child lock, the lock manager releases the parent lock upon the reference count attainment of a zero value (see page 2, [0022]: ***"The reference count of the entry that was previously assigned to the destination register (the entry number that was kept in the destination register's architectural state pointer before it was written with the new entry number) is decremented by 1. In most cases, the decremented reference count becomes 0, indicating that the associated entry is now free" – free is analogous to release***).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Song's teaching of reference count decrements by a value of one would have allowed Joshi's system to keep tack of the entries in a queue. The reference counter is associated with each of the entries the queue.

Regarding claim 27, Joshi discloses the computer readable medium of claim 26 further comprising a further computer executable component that monitors the reference count (see column 12, lines 34 – 36).

Regarding claim 28, Joshi teaches forwarding pointer device that identifies a parent lock associated with a released child lock (see column 10, lines 63 – 65).

Regarding claim 30, Joshi discloses the reference count is the count of direct child locks associated wit the parent lock (see column 15, lines 34 - 39).

4. Claims 9, 10, 18, 20 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi in view Song and further in view of U.S. Patent No. 6,108,654 issued to Chan et al., (Herein after "Chan").

Regarding claim 9, Joshi and Song disclosed the claimed subject matter as discussed in claim 1. Joshi or Song does not explicitly disclose an exclusive, update or shared lock as claimed

Chan discloses the child lock is at least one of an exclusive, update and shared lock at a level of the hierarchy (see column 1, lines 48 - 49).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Chan's teaching of "exclusive lock" would have allowed Joshi and Song's system to prevent dirty read. Dirty read

introduces inconsistency into the system with respect to the value of the concurrently accessed object, thereby compromising the integrity of the data on the system (see Chan column 1, lines 32 – 35)

Regarding claim 10, Chan teaches the database management system of claim 1, the reference count is performed upon completion of a least one of a scan, query or operation (col. 12, lines 36-38).

Regarding claim 18, Chan teaches scoping the reference counting of a lock to a transaction (column 12, lines 34 – 35).

Regarding claim 20, Joshi discloses a computer implemented database management system comprising:

locking means for locking a resource on a database (see column 10, lines 29 – 34);

means for counting one or more child locks associated with the locking means (see Fig. 11 step 104 and column 15, lines 38 –39); and each child lock is released (column 12, lines 56 – 57);

Joshi does not explicitly disclose counting means is decrease by one as claimed.

Song discloses wherein the counting means is decrease by one as each child lock is released; and wherein lifetime of the locking means ends when the locks associated with all the children are released (see page 2, [0022]: ***"The reference count of***

the entry that was previously assigned to the destination register (the entry number that was kept in the destination register's architectural state pointer before it was written with the new entry number) is decremented by 1. In most cases, the decremented reference count becomes 0, indicating that the associated entry is now free" – free is analogous to release).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Song's teaching of reference count decrements by a value of one would have allowed Joshi's system to keep tack of the entries in a queue. The reference counter is associated with each of the entries the queue.

Chan discloses means for determining a lifetime of the locking means (see column 6, lines 15 – 18) base on the number of child locks associated therewith (see column 6, lines 8 – 12; "nodes are interpreted as children having locks").

Further Chan's teaching of determining the time to hold a lock would have allowed the lock manager of Joshi and Song's system to maintain a set of resource names and provides operations for allowing multiple processes to synchronize the concurrent access of named resources.

Regarding claim 29, Chan discloses a probabilistic classification model (see column 10, lines 62 - 67).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED I. EHICHIOYA whose telephone number is (571)272-4034. The examiner can normally be reached on M - F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pierre M. Vital can be reached on 571-272-4215. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fred I. Ehichioya/
Examiner, Art Unit 2169